

sively as a vegetable, with meat at pleasure. Urine, specific gravity, 1.036; quantity, 5 quarts. At the end of twenty-four hours, specific gravity, 1.030; quantity, 3 quarts; drank 3 quarts. April 16th.—Sugar, 4 per cent., or 301 grains to the pint.

A regular daily account of the drink and urine, with the specific gravity, was kept from April 6th to 28th. The card bearing the record of quantities was unfortunately lost; but the record states, in general, that the amount of drink and urine was nearly the same, and was usually 3 or 4 pints in twenty-four hours; on the last day it was reported  $1\frac{3}{4}$  quarts. The specific gravity for the five days previous to the diet averaged 1.034; for the next eight, 1.028; for the remaining fourteen, 1.033. The patient rarely rose in the night, there was no more than ordinary thirst, and he gained flesh and strength rapidly. After the first fortnight he was not overscrupulous about his diet, and was often known to partake of bread puddings and other tempting dishes. This, no doubt, accounts for the increased density of the urine at this latter period. At last he became so insubordinate that he was reprimanded, and absconded May 6th.

Incomplete as the case is, and unreliable as the patient was, the influence of the bran cake was very decided; and in connection with other reported cases, affords encouragement under this treatment, or treatment based upon the same principle.

## SOME INQUIRIES INTO THE PATHOLOGICAL CONDITIONS OF THE CHEST THAT YIELD TYMPANITIC PERCUSSION SOUNDS.

BY D. D. HANSON, M.D., HARTFORD, CT.

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THE question involved in these inquiries does not relate to the pathognomonic resonance of pneumothorax and pulmonary cavity, but to a more sharp and metallic percussion sound sometimes detected when symptoms of pneumonia, pleurisy, or both, are manifest. Whether such sounds can be communicated in any stage of these complaints, has not been so fully discussed as to give a well-defined conviction in the minds of the profession, and, when they occur in these complications, cannot fail to perplex and confuse the diagnosis. In giving the physical signs of these two diseases, standard authors teach us to expect dulness over the affected part, in pneumonia, which increases to complete flatness, as infiltration goes on, from partial to complete consolidation; in pleurisy, after effusion commences, the region occupied by the fluid yields the same dulness, increasing to complete deadness as the effusion advances. In the one case, the lung is presumed to become consolidated from infiltration within its tissues; in the other, the organ is supposed to collapse from the pressure of the effusion from without. In both cases, the percussion dulness advances to flatness, *pari passu*, with

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the progress of the disease. How far these views are correct, and where important fallacies may occur, will appear, should it be found that, in the first stages of pneumonic and pleural effusions, in some positions of the patient, the percussion sound, instead of being more dull, is actually sharper and clearer. The following case illustrates this point.

Mr. Lamb, Main St., was found, Jan. 11, 1861, confined to his bed, having taken a chill six days previously, followed with febrile excitement, harassing but dry cough, and pain and oppression in chest; pulse 96; tongue covered with white coating. Over the lower posterior part of the right lung, a small space yields complete dullness on percussion; murmur over same region suppressed, but bronchial respiration not evidently present. The lower and anterior part of the left lung gives no murmur, but a *sharp, clear tympanitis, both in the horizontal and erect position*; posteriorly, the respiratory murmur is faintly audible, and resonance less sharp and dense. As this case advanced, and resolution established crepitation, this tympanitis declined to the normal resonance.

In this case we have lobular inflammation of the right lung in the second stage, and a milder but more extensive inflammation of the left, with partial infiltration. The *hepatization* in the right lung gives complete percussion deadness; the *partial* consolidation of the left yields a sharper and clearer resonance than in health. But it will be seen that the lung, when partially consolidated from any cause, will yield a denser and clearer sound in consequence.

Mr. Archibald, Queen St., in February, 1858, called me in haste, and informed me that, about five days previously, he was attacked with chills, soon followed by a piercing pain near the left nipple, with cough and marked febrile excitement. He lay supine and completely horizontal, not so much as a pillow or bolster beneath the head or shoulders; an approach to the sitting posture threatened asphyxia; respiration hurried and laborious, face bathed in perspiration, expression anxious, grayish-white coat on the tongue, pulse 120. The left thorax was found distended, painful to pressure, murmur suppressed, and *percussion yielded a dense, clear tympanitis from diaphragm to fifth rib*. This percussion resonance differs from that of pneumothorax, or flatulent stomach, as a chord of a viol, when tuned, differs from that of the same instrument when slackened.

Mr. Bonfrey, of Collinsville, Conn., was first attacked with rheumatism of the right leg, attended with extensive œdema and neuralgic pain. When this subsided, there resulted bronchial irritation and œdema of the left lung. Tonics and stimulants were followed by metastasis of the irritation to the limb again, with renewed violence. This demonstration was followed by œdema of the same lung, but no bronchitis. Sixteen days after this, Dec. 27, 1860, the following notes were entered: left thorax instead of deadness, as at previous date, gives a *loud and sharp percussion*

sound from diaphragm to nipple when recumbent ; when erect, a deadness over about three fourths of the same region. Same signs posteriorly, and for the first time he complains of a troublesome pleuritic pain and soreness over the affected part. Long inspiration gives ægophonic gurgling, but no crepitation.

Hardly a doubt can be entertained in regard to the existence of pleuritic effusion in these two cases, yet the tympanitis is not easily reconciled with that pathological condition by many who entertain the general opinion that the lung being wholly or in part submerged, proportionate collapse, yielding percussion deadness, must follow. It remains, therefore, to prove this idea incorrect, and the following simple fact is sufficient. The lungs in a healthy condition, with their appendages entire, forced under water, will not only not collapse, but, thus submerged, will buoy several pounds weight for hours, the truncated end of the trachea being free for the ready exit of latent air. This experiment must force upon us the conclusion that, in pleuritic effusions, when no force of compression is brought to bear upon the lung greater than the gravity of the fluid, collapse and consolidation of the organ does not take place. The superior gravity of the effusion brings it to the most dependent part, which is the posterior wall, when the patient is supine and horizontal, and to the diaphragm when erect. In the former position, the lung is floated to the opposing wall with a force of compression proportionate to the extent of the effusion. The latent air mechanically confined in the cells becomes thus condensed in the same ratio, and the most patent law of acoustics decrees that a sharper toned percussion sound must be expected. This was manifestly the condition in the two preceding cases. In the first, the effusion was so great that, in the erect posture, the fluid so elevated the lung as to close the main bronchial tubes and threaten asphyxia ; in the latter, not sufficient for that result, but still enough to give a decided flatness on percussion, when resting on the diaphragm and displacing the lung.

Dr. Wood (*Practical Medicine*, Vol. II., p. 39) gives the following upon pleuritic effusion, bearing upon the question.

"Sometimes, when a small portion of the lung is in contact with the walls of the chest, while the rest is separated from them by effusion, a tympanitic sound is yielded on percussion, which might be mistaken as the sign of pneumothorax or pulmonary cavity.— (*Notta. Arch. Gen.*, 4e Sér., xxii., 437.)"

The difference between this tympanitis and that of pneumothorax and pulmonary cavity increases with the advance of the effusion, the sharp metallic sound being easily distinguished from the cavernous resonance of the latter conditions.

But Dr. Markham, of St. Mary's Hospital, reports the most satisfactory experiments bearing upon these sounds, and I hope I shall be pardoned for making liberal extracts. He says:—

"In the one case, the left lung was found reduced by the pressure

of pleuritic effusion to about one fourth or fifth of its natural size; its lower lobe being *completely*, and its upper lobe *partially* consolidated. In the other case, the *partial* consolidation was general throughout both lungs; it was caused by the effusion within them of the products of inflammation, excited by the rapid and extensive deposition of miliary tubercles. Now, when in these two cases the lungs, thus differently circumstanced as regards the nature of the disease affecting them, were removed from the bodies after death, placed side by side, and percussed, it was observed that the *partially* condensed upper lobe of the pleuritic case, and every part of the lungs invaded by inflammation in the other—especially the posterior parts, where the consolidation was most advanced, and the lungs contained the least amount of air—yielded a remarkably clear percussion sound, which, in both cases, as far as the ear could judge, was exactly alike in its characters.” After giving a differential description of this percussion sound, he proceeds:—

“The left side of the thorax of the patient attacked by the pleuritic effusion yielded, two days before her death, a completely dull percussion sound at every part; and the heart was found beating to the right of the sternum. To relieve the great difficulty of breathing, induced by this sudden and copious effusion of serum, a very fine trocar was introduced into the pleural cavity, and about twenty ounces of fluid withdrawn therefrom by the aid of an exhausting syringe. Great care was taken that no air entered into the pleura, and that none did, I am satisfied—having assisted at the operation. Temporary relief was thus afforded the patient; and now, immediately after the operation, on percussion beneath the clavicle, we found, instead of the completely dull percussion sound observed previously, a remarkably loud, clear, tympanitic sound—so marked, indeed, as to lead an observer to suppose that air had found its way into the chest. That there was no necessity for our thus calling in the presence of air to give reason for the sound, we had demonstrative proof after the patient’s death, when the body was examined. No air escaped from the pleura, but on puncturing the left thorax a large amount of fluid gushed forth, and when a certain amount had escaped, the partially condensed lung floated forward against the upper and anterior walls, and its percussion now, both within, and when removed from the thorax, yielded a character of percussion sound *exactly similar to that which it had offered during life*, after a portion of the pleuritic fluid had been withdrawn.”—(*Monthly Jour. Med. Science*, 1853, p. 173. Selected by Braithwaite, XXVIII., 88.)

The italics are Dr. Markham’s, and he concludes that Skoda’s assertion that a “partially condensed lung yields a clearer and more tympanitic percussion sound than a healthy inflated lung, is correct.”

From these facts, although we are not warranted in the attempt

to overthrow the conviction ripened by a succession of intelligent observations, that pneumonic and pleural effusions yield dullness on percussion, increasing to flatness with the progress of the mischief, yet it may be safely asserted that they are exceptions to the rule; and that the exceptions, thus pointed out, are quite as important as the rule itself, in arriving at an early and demonstrative diagnosis in pneumonia and pleurisy. Dr. Markham's concluding remarks are eminently practical, touching pneumonia:—

"In certain cases of pneumonia, *if not in all*, when the consolidation of the lung has reached a certain stage, *but not yet that of hepatization*, the percussion sound over the affected part, so far from being duller, is *actually clearer than natural*. The error of diagnosis into which a misinterpretation of this fact may lead the physician, is manifest enough; it may induce him at a critical period of the disease, viz., when the lung is on the eve of complete consolidation, to prognosticate a commencing return to its healthy condition."

So in pleurisy, let the patient lie horizontal upon his back, and this percussion tympanitis will unerringly herald the first approach of effusion within the cavity, while the dullness and flatness linger to announce only the sorry fact of the partial or complete collapse and consolidation of the lung.

## A SURGICAL CURIOSITY.

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FEB. 19, 1861, I was requested to visit N. W., of A., who, I was informed, had been in extreme suffering for ten days, in consequence of some foreign body in his bladder. I found my patient to be a bachelor, aged about fifty years; and from him and his attending physician obtained the following history of his case. About ten days previous to my visit, he had introduced into his urethra a piece of a common tobacco pipe-stem, for the purpose of relieving a strangury, which, the patient said, he had frequently done before; and although he had attached to the end of the pipe a string, yet from some unexplained carelessness, it escaped from his hold, and from subsequent injudicious manipulation, it had found its way, with the pipe-stem, into the bladder.

The scrotum and penis were enormously enlarged, and their whole surfaces, as well as those of the adjacent parts, had become very much discolored: they were evidently infiltrated with urine, and from a minute opening near the perinæum there was a constant weeping of that fluid.

The pulse was feeble, and the patient was completely prostrated from the long-continued suffering he had undergone—he having resisted the oft-repeated recommendation of his medical adviser to send for counsel, in reference to an operation.

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